orealia

Reality revealed

Orealia|DESIGNER 1.5

QuickStart

17-308

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3D VISUALIZATION & VIRTUAL REALITY

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2. About the tutorial

This beginner level tutorial is designed to help you become familiar quickly with some of Orealia|DESIGNER program features by following a simple exercise.

For a more detailed description of each tool, we recommend that you read the user's manual installed with the program.

The following icons appear on certain pages to indicate important points or suggestions:

This icon indicates some useful supplementary information

This icon indicates important information to remember

This icon indicates technical information for the initiated reader

After installing Orealia|DESIGNER on your computer, the resources for this tutorial are located in the directory:

[Orealia|DESIGNER installation path]/Resources/Tutorials/Cell_Phone/

Applications File/OrealiaDesigner/Contents/resources/Tutorials/Cell_Phone/

This project includes the *TEXTURES* directory where all the images and photos necessary for this tutorial are located.

Illustration 1 – The final 3D scene obtained through this tutorial

3. Part 1 – Import a 3D model

Orealia|DESIGNER in its standard version imports eight different formats: Autodesk FBX (*.fbx*), Collada (*.dae*), Wavefront Object (*.obj*), 3D Studio Mesh (*.3ds*), Autodesk AutoCAD (*.dxf*), Stereo Lithography (.stl), X3D (.x3d) and Virtual Reality Modeling Language (.vrml)

In this exercise, the geometry to import is in FBX format:

1. Select the menu ***File >*** ***Import Scene***
2. The file selector opens. Click on the file name *Cell_Phone.fbx* in the directory:
   [Orealia|DESIGNER installation path]/Resources/ Tutorials/Cell_Phone/
   Applications File/OrealiaDesigner/Contents/resources/ Tutorials/Cell_Phone/
3. The import window appears and allows you to choose the options linked to the FBX format (*Illustration 2*)
4. Leave default options unchanged
5. Click ***OK*** to import the file
6. A progress bar indicates the progress of the import. When the procedure is completed, the object appears in the 3D view (*Illustration 3*).

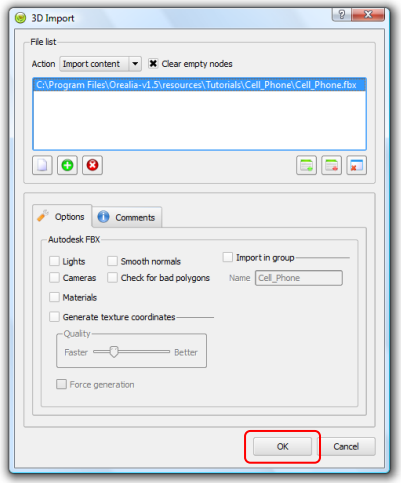

Illustration 2 – 3D geometry import window

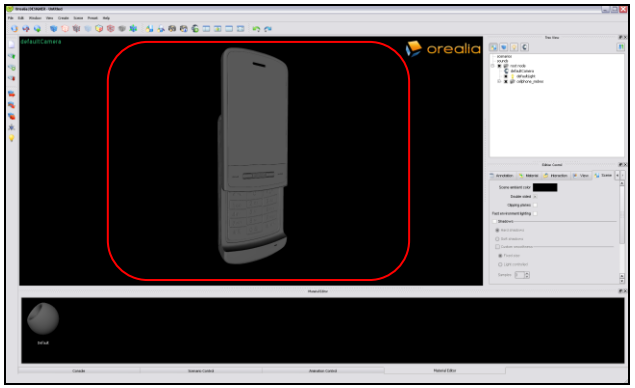

Illustration 3 – The imported file *Cell_Phone.fbx* is visible in Orealia's 3D view

6. Part 2 – Set up a photo environment

Setting up an environment from a photo allows you to create lights and reflections of the 3D scene from the analysis of this photo's lighting properties.

1. Select the menu ***Create >*** ***Create Environment*** (*Fig 4*)
2. In the ***Type*** area, choose ***none*** (this option is used when you don't want the environment to appear in the3D view)
3. Check the option ***Environment map*** in order to select the photo that will be the basis for the environment.
   Click on ***Browse*** and choose the photo file named: *BlackWhiteENV.hdr* in the *textures* directory (see the paragraph on Resource files)
4. Leave default parameters unchanged and click on ***Create***
5. When the photo analysis is completed, the element ***environment1*** appears in the ***TreeView*** window (*Illustration 5*), accessed through the menu ***Window > Tree View***.

This new element that was added to the scene includes all the information from the previous calculation, such as lights or reflection data that will be used in ***HDR*** materials later.

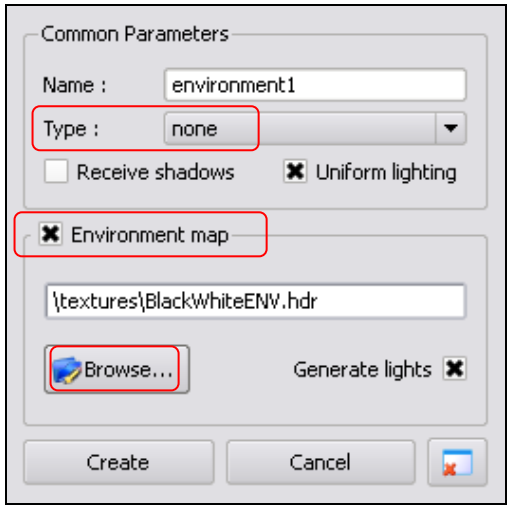

Illustration 4 – Create environment window

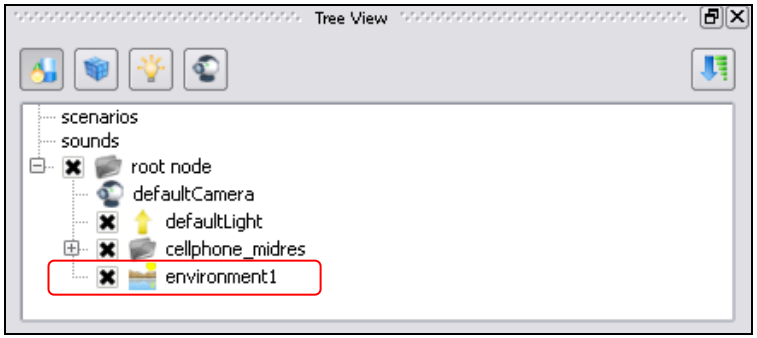

Illustration 5 – The environment appears in *TreeView*

4. Part 3 – Create the appearance of 3D objects

Creating a material combined with one or several textures allows you to give a skin to 3D objects in order to give them a photo-realistic look. In Orealia|DESIGNER the result of all these manipulations is instantaneous.

1. Select a 3D object

1. Left-click in the 3D view to select the object representing the cell phone screen. The object thus selected appears with a green mesh representing its geometry structure (*Illustration 6*).

2. The object just selected is highlighted in the ***Tree View*** (*Illustration 7*).

Illustration 6 – The selection of the 3D object is represented by a green mesh.

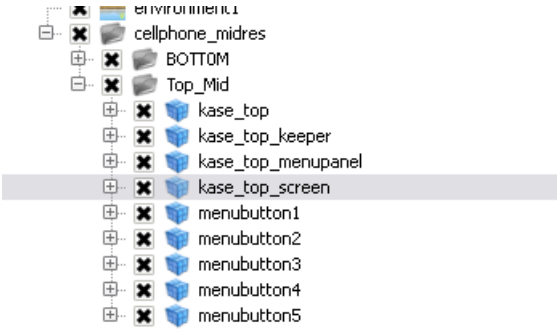

Illustration 7 – Appearance of a selected object in the *Tree View*

2. Create and assign an HDR material to the geometry

1. Select the menu ***Create >*** ***Create Material*** (*Illustration 8*)

2. Among all the different types of materials, click on ***HDR***

> The ***HDR*** material takes into account the information related to lighting and reflection from the environment previously created.

3. In the area ***Common attributes***, click on the open file icon on ***Diffuse***

> ***Diffuse*** is used to simulate the information about the light emitted by the material (here with a texture).

4. Select the file named *Screen.jpg*

5. Click on the black rectangle located on the right of ***Ambient***

> ***Ambient*** is used to simulate the information about the material's ambient with a color.

6. Choose a gray color value of 100 for red-green-blue components.

7. Click on ***Create and assign*** to create the material and assign it to the 3D object previously selected.

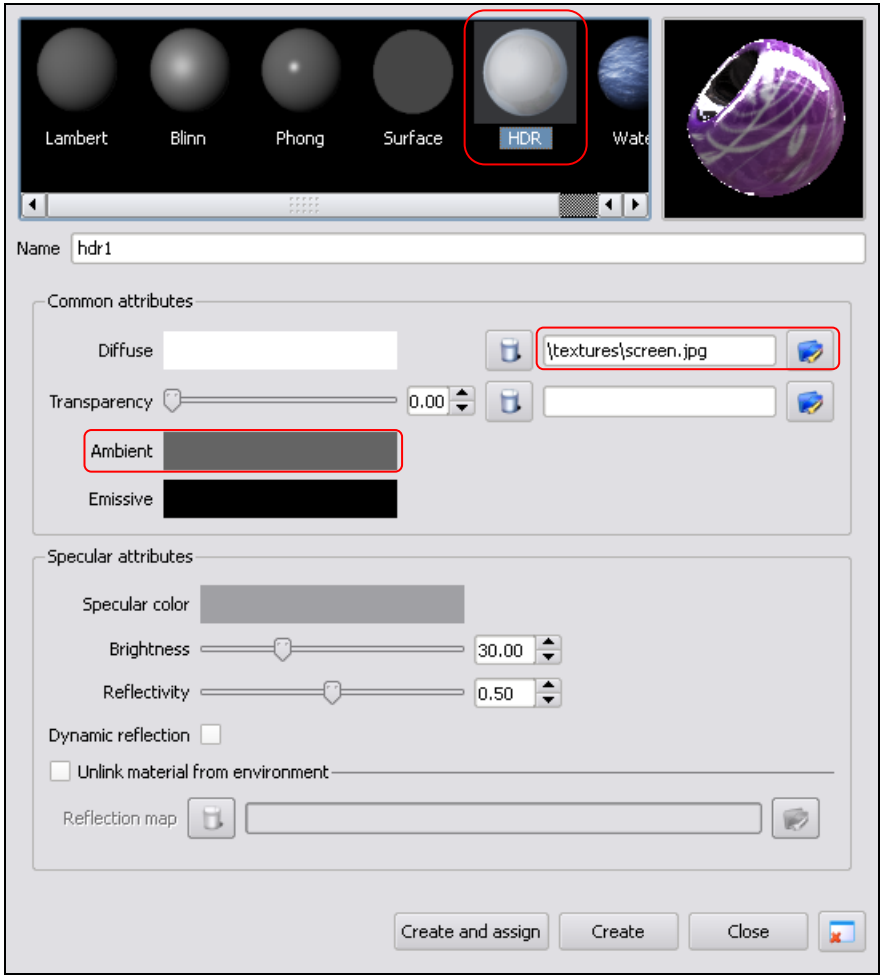

Illustration 8 – Create material window (here HDR material)

8. You obtain the result of the image on the right (*Illustration 9*)

9. Similarly you can create a material and assign it to the following objects:

- Keyboard with the texture *Keyboard_bump.png* in ***Bump*** with a ***Blinn*** material.

  Here we are not using a ***HDR*** material but you can simulate a reflection effect by adding the texture file named *BlackWhiteREFX.tga* in ***Reflection map***.

  Bump is used to generate the information about a material's relief with a texture.

- Phone body with a ***HDR*** material without particular texture (it is not necessary to put a texture for the reflection because the ***HDR*** material is linked to the data from the environment).

- Option panel below the screen with the texture *MenuPanel_bump.jpg* in ***Bump*** of a ***Blinn*** material (you can also simulate the reflections as described above)

- The materials of the buttons on the right side of the phone can be created with the 5 textures *LogoXXXX_bump.jpg* (XXXX replaces the logo name) in ***Bump*** of a ***Blinn*** material.

Illustration 9 – Look of 3D object after creating an *HDR* material

5. Part 4 – Understanding interactivity

Now that the rendering of the cell phone is finished, let us experiment with interactivity. The user will now be able to open the cell-phone slider.

1. Create slider animation

1. In ***Tree View***, open the group *cellphone_midres* by clicking on ⊞ on the left of the name. Select the group *Top_Hi* located underneath (*Illustration 10*).

   A group is used to group several elements of different nature (geometry, light, animation…)

2. In ***Edition Control*** (menu ***Window > Edition Control***), click on the thumbnail ***Node*** and from there you can access the coordinates of the selected ***node*** in the scene.

3. Position the mouse pointer on ***Position*** and right click to access the menu ***Add to animation > New*** (*Illustration 11*). Keep the name suggested and click on ***Create.***

   The X, Y, and Z cells under ***Position*** are displayed in red to indicate that they are animated.

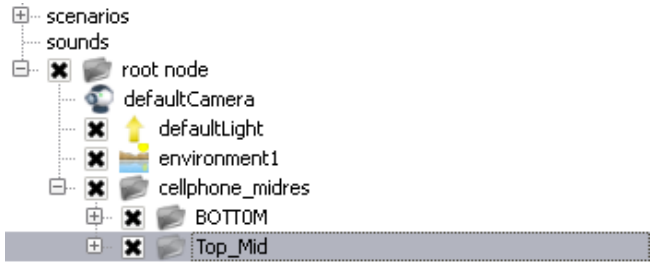

Illustration 10 – Selecting a group in *Tree View*

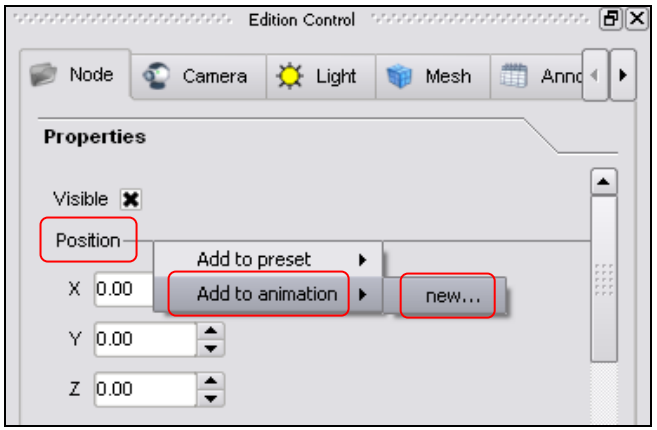

Illustration 11 – Creating an animation key on a parameter

A first animation key was laid down for the values X=0, Y=0 and Z=0. Now you need to move the group *Top_Hi* down to place it in a position corresponding to a closed slider.

4. While *Top_Hi* is still selected, enter: *-193* in the cell ***Y***. The top part of the phone slides down to a “closed” position.

5. In ***Animation Control*** (menu ***Window > Animation Control***), place the timeline (red vertical bar) to 3.5 seconds (*Illustration 12*).

6. Position the mouse pointer on ***Position*** in the thumbnail ***Node***, and right click to access the option ***Add key to current animation*** (*Illustration 13*).

> The parameters X, Y, Z are interdependent and cannot be animated independently.

The two slider positions "opened/closed" are fixed and separated by 3.5 seconds, allowing Orealia|DESIGNER to interpolate the motion between these two points.

> To trigger this animation interactively in 3D view, we are going to create a scenario containing one or several clips that can be triggered at different times.

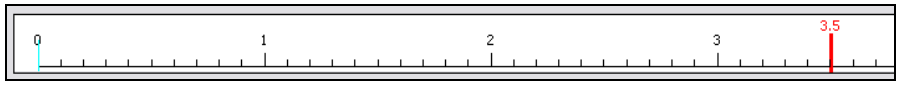

Illustration 12 – Current animation *Time line*

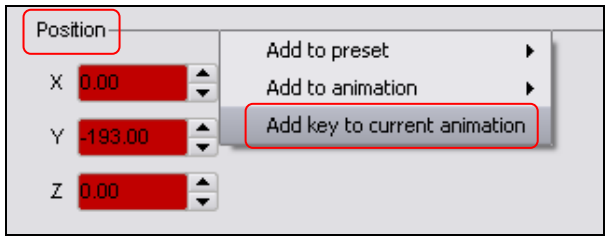

Illustration 13 – Option used to add a key to the current animation

2. Create an interactive scenario

Clicking on the phone screen will trigger the scenario.

1. To do this, select the geometry representing the screen in 3D view (see chapter Select a 3D object).
2. Select ***Create >*** ***Create Scenario*** (*Illustration 14*)
3. Select ***On click*** to trigger the scenario by clicking on the object selected (here the screen); then click on ***Create***.
4. In ***Scenario Control*** (menu ***Window > Scenario Control***) let us now place the slider animation in the scenario just created.
5. The animation (or ***Clip***) *clip_Top_Mid* is listed on the left clip_Top_Mid. With a drag&drop, you can place it on the right (*Illustration 15*).
6. The scenario has now been created with an animation. Now, place the cursor over the phone screen in 3D view, and the hand icon will tell you that you can trigger the scenario with a double right click.
   In this case, this would open or close the phone slider.

Illustration 14 – Create Scenario window

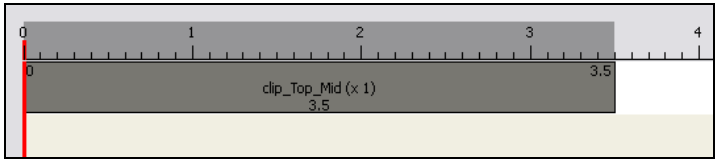

Illustration 15 – Positioning a clip in a scenario

6. Part 5 – Deploy your work

1. Image output

1. Select ***View >*** ***Take Screenshot***
2. Choose the save format (PNG, JPG, BMP)

> The format of the image saved is that of the screen display resolution. To customize the size, use ***View >*** ***Take Custom Screenshot***

2. Video output

1. Select ***View >*** ***Start Recording*** (*Illustration 16*)
2. Choose the output format (Flash, MPEG2, AVI, QuickTime or Séquence d'images) then click on ***Record*** to start.

3. Autonomous file output

1. Select ***File > Deploy >*** ***Deploy self executable*** (Windows) or ***File > Deploy >*** ***Deploy self application*** (Mac)
2. You can save and name the file in the file selector.
3. A file with this icon as well as the extension .exe (Windows) or .app (Mac) appear at chosen location:

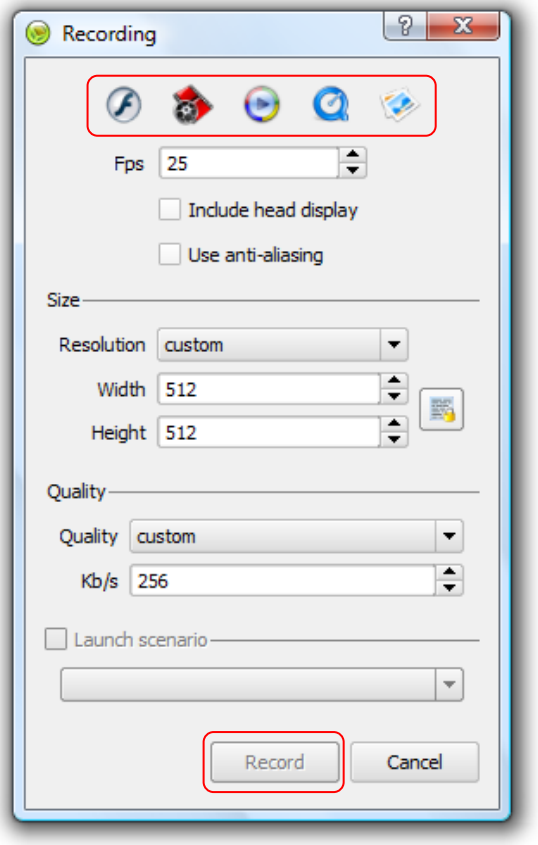

Illustration 16 – Options to save a video

7. Recommended system configuration

The innovative algorithms developed in the Orealia solution use the latest graphics cards technology available on the market. Therefore, in order to ensure the best possible results, we recommend using Orealia|DESIGNER with a recent graphics card.
In order to check the compatibility of your equipment with our software, you can download a system configuration checker by clicking on the following link: Orealia|CHECK (Windows)

1. Windows/Linux

Operating system	Microsoft Windows XP/VISTA or Linux (*) in 32 bits or 64 bits
Processor	Intel Pentium IV, AMD Athlon or above
RAM Memory	512 Mo or more
Hard disk	Minimum available room of 300 Mo
Sound	Traditional integrated chipset for multimedia use
Graphics card	**Minimum:** NVIDIA GeForce 6 card or ATI Radeon Xxxx with 256 Mo memory **Recommended for better performance:** NVIDIA Quadro FX or GeForce 7/8 with 512 Mo memory The latest NVIDIA or ATI drivers installed on your computer

(*) The following Linux distributions have been tested:
Kubuntu release 6.x - Suze 10

2. Mac

Operating system	Mac OS X "Leopard" 10.5 or above in 32 bits or 64 bits
Processor	Intel Processor
RAM Memory	512 Mo or more
Hard disk	Minimum available room of 300 Mo
Sound	Traditional integrated chipset for multimedia use
Graphics card	**Minimum:** NVIDIA GeForce 6 card or ATI Radeon Xxxx with 256 Mo memory **Recommended for better performance:** NVIDIA Quadro FX or GeForce 7/8 with 512 Mo memory The latest NVIDIA or ATI drivers installed on your computer

8. Navigation and shortcuts

1. Navigating in 3D view

The mouse allows you to navigate in 3D scenes through the *Orbit* mode. This is the default mode, adapted to moving around an object.

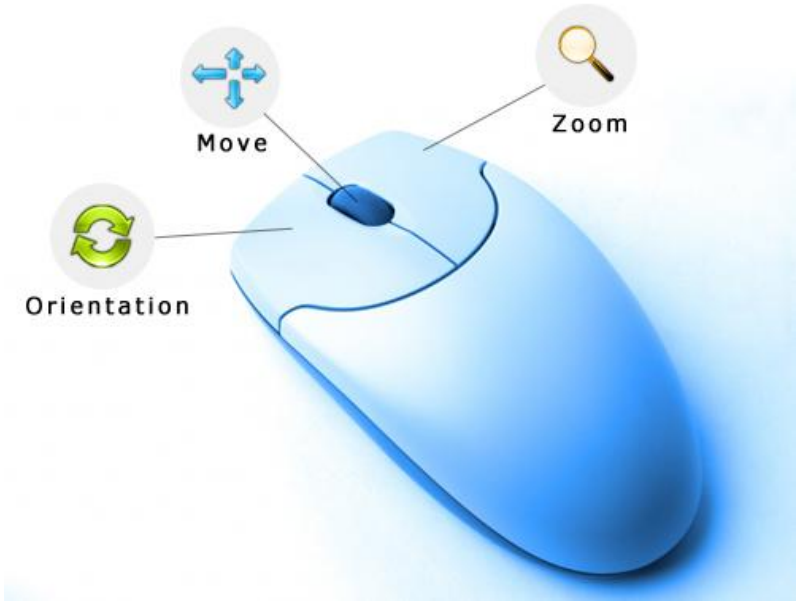

Illustration 17 – Mouse click functions in Orbit mode

this icon indicate a mouse mouvement

LEFT CLICK	Windows/Linux/Mac
Orientation Camera	LEFT *Press and hold* +

RIGHT CLICK	Windows/Linux/Mac
Zoom Camera	RIGHT *Press and hold* +

MOUSE WHEEL CLICK	Windows/Linux/Mac
Pan Camera	WHEEL *Press and hold* +
Center Object	MOUSE WHEEL *Click*

Besides navigating in a 3D scene, these shortcuts give you access to many features:

LEFT CLICK	Windows/Linux/Mac
Select Object	LEFT *Click*
Add object to selection	CTRL (ou ⌘) + LEFT *Click*
Select rectangle	CTRL (ou ⌘) + LEFT *Click* +
Creating Annotation	SHIFT (ou ⇧) + LEFT *Click* +

RIGHT CLICK	Windows/Linux/Mac
Start scenario	*Double Right-Click* (ou ⌘ + RIGHT *Click*)
Choose camera menu	SHIFT (ou ⇧) + RIGHT *Click*

2. Shortcuts in 3D view

The following features have an effect in 3D view and may not necessarily be accessed directly through an option in the interface:

ELEMENTS IN THE 3D VIEW	Windows/Linux	Mac
Display Performance	D	D
Increase size of manipulators	+	+
Decrease size of manipulators	-	-
Increase size of 3D view icons	CTRL +	⌘+
Decrease size of 3D view icons	CTRL -	⌘-

3. User's interface shortcuts

The following tools can be accessed in the drop-down menus and the toolbars:

FILE MENU	Win/Linux	Mac	
New scene	CTRL + X	⌘X	
Open scene	CTRL + O	⌘O	
Save scene	CTRL + S	⌘S	
Importer Scène	CTRL + I	⌘I	

EDIT MENU	Window/Linux	Mac	
Undo	Z	Z	
Redo	CTRL + Z	⌘Z	
Delete selected object	SUPPR	BACKSPACE	
Position	W	W	
Orientation	E	E	
Scale	R	R	
Property	T	T	
Pivot Edition	Y	Y	

VIEW MENU	Window/Linux	Mac	
Center camera on all objects	A	A	
Center camera on selected object	C	C	
Screenshot	CTRL + P	⌘ P	
Full Screen display	F	F	

HELP MENU	Window/Linux	Mac	
Help file	F1	⌘ ?	

The icons in the table correspond to shortcuts accessed from the toolbars.

Publication date: December 20, 2007

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